

WHAT IS CLAIMED IS:

1. A method of removing moisture and toxic gas components from exhaust gas, characterized by comprising:

5 a process of making exhaust gas, exhausted from an LNG burning boiler, flow through coolant contained in a dehydrating tower to cool it to such a temperature as to solidify moisture and nitrogen oxides but not carbon dioxide, thereby solidifying moisture and nitrogen
10 oxides contained in the exhaust gas to separate from the exhaust gas;

a process of introducing the solidified moisture and nitrogen oxides into a solid-liquid separator thereby separating the moisture or the nitrogen oxides from the
15 coolant; and

a process of making the coolant be contained in a cooling tower so as to be cooled, and then making the coolant be contained in the dehydrating tower again so as to be circulated.

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2. The method of removing moisture and toxic gas components from exhaust gas according to claim 1, characterized by comprising:

a process of introducing the moisture and nitrogen
25 oxides separated from the coolant into a separation tower and raising in temperature the moisture and nitrogen oxides thereby liquefying the moisture and nitrogen oxides.

30 3. The method of removing moisture and toxic gas

components from exhaust gas according to claim 2, characterized by comprising:

a process of introducing the coolant retrieved in the separation tower into the cooling tower.

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4. The method of removing moisture and toxic gas components from exhaust gas according to any one of claims 1 to 3, characterized in that the coolant includes any one of dimethyl ether, methanol, ethanol, toluene, and ethyl benzene.

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5. The method of removing moisture and toxic gas components from exhaust gas according to any one of claims 1 to 4, characterized by comprising:

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a process of cooling the coolant by using the heat of vaporization that is produced when LNG is used as gas fuel.

6. A system of removing moisture and toxic gas components from exhaust gas, characterized by comprising:

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an apparatus of making exhaust gas, exhausted from an LNG burning boiler, flow through coolant contained in a dehydrating tower to cool it to such a temperature as to solidify moisture and nitrogen oxides but not carbon dioxide, thereby solidifying moisture and nitrogen oxides contained in the exhaust gas to separate from the exhaust gas;

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an apparatus of introducing the solidified moisture and nitrogen oxides into a solid-liquid separator

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thereby separating the moisture or the nitrogen oxides from the coolant; and

an apparatus of making the coolant be contained in a cooling tower so as to be cooled, and then making the
5 coolant be contained in the dehydrating tower again so as to be circulated.

7. The system of removing moisture and toxic gas components from exhaust gas according to claim 6,
10 characterized by comprising:

an apparatus of introducing the moisture and nitrogen oxides separated from the coolant into a separation tower and raising in temperature thereby liquefying the moisture and nitrogen oxides.

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8. The system of removing moisture and toxic gas components from exhaust gas according to claim 7, characterized by comprising:

an apparatus of introducing the coolant retrieved
20 in the separation tower into the cooling tower.

9. The system of removing moisture and toxic gas components from exhaust gas according to any one of claims 6 to 8, characterized in that the coolant includes
25 any one of dimethyl ether, methanol, ethanol, toluene, and ethyl benzene.

10. The system of removing moisture and toxic gas components from exhaust gas according to any one of
30 claims 6 to 9, characterized by comprising:

an apparatus of cooling the coolant by using the heat of vaporization that is produced when LNG is used as gas fuel.